

REMARKS

Claims 1-24 are pending in the application. Claims 1, 5-7, 10, 12, 13, 17-19, 22 and 24 are amended herein. Favorable reconsideration of the application, as amended, is respectfully requested.

I. ALLOWABLE SUBJECT MATTER

Applicant again acknowledges with appreciation the noted allowability of claims 5-7 and 17-19 subject to being amended to overcome the indefiniteness rejection.

II. REJECTION OF CLAIMS 5-7 AND 17-19 UNDER 35 USC §112, 2nd ¶

Claims 5-7 and 17-19 stand rejected under 35 USC §112, second paragraph, as being indefinite. Applicant respectfully withdrawal of the rejection for at least the following reasons.

The Examiner asserts that ' $\alpha(v)$ ' can be broad, and the equation P_m should be written to $P_m(v)$ accordingly since P_m depends on the variable " v ". In response to the Examiner's concerns, applicant has amended claims 5-7 and 17-19 to recite $P_m(v)$, $P_p(v)$, $P_e(v)$ and $P_{ps}(v)$, $P_{pl}(v)$, respectively. In other words, each of the power levels in the equation are now expressly indicated to be functions of the linear velocity (v).

Thus, the amendments clarify that the equations recited in the claims are functions depending on the linear velocity (v). As previously pointed out by the applicant, it is not relevant that the functions $\alpha(v)$ or $\beta(v)$ may be a function of some other un-specified variables, so long as $\alpha(v)$ and $\beta(v)$ are functions of the linear velocity (v) at least.

Accordingly, applicants respectfully submit that the claims are definite and the rejection should be withdrawn.

IV. REJECTION OF CLAIMS 1-4, 8-16 AND 20-24 UNDER 35 USC §102(b)

Claims 1-4, 8-16 and 20-24 remain rejected under 35 USC §102(b) based on *Toda et al.* Applicant respectfully requests withdrawal of this rejection for at least the following reasons.

In the Examiner's facsimile dated November 22, 2010 in preparation for conducting a telephone interview, the following limitations to claim 1 were requested by the Examiner in order to overcome the prior art of *Toda*:

- (1) *one single pulse P_m for the middle portion of the recording mark (equation 2, 3, section 0117)*
- (2) *the second pulse is one of the erasing power $P_e(v)$ and peek power $P_p(v)$; and*
- (3) *the power coefficient (section 0113) is needed to show the relationship between the single pulse P_m and the second pulses where the power coefficient, and the second pulses are depended on velocity v .*

Regarding (1) and (2), applicants respectfully submit that such features *are* already reflected in the independent claims 1, 10, 12, 13, 22, and 24, and are not necessary to further define. Specifically, in Figs. 2A-2C of the specification, the intermediate pulse 2A or the intermediate pulse 2B corresponds to "a first pulse for forming a central portion of the recording mark, among the recording mark and the space" as recited in claim 1. Additionally, the leading pulse 1A, trailing pulse 3A and the erasing light pulse A (or the leading pulse 1B, trailing pulse 3B and the erasing light pulse B) correspond to "a second pulse for forming a portion other than the central portion of the recording mark, among the recording mark and the space" as recited in claims 1, 10 and 12. (See, e.g., paragraph bridging pages 25-26 of the specification).

Any pulse can be used as a first pulse, as long as it is "a first pulse for forming a central, portion of the recording mark, among the recording mark and the space". Any pulse can be used as a second pulse, as long as it is "a second pulse for forming a portion other than the central portion of the recording mark, among the recording mark and the space" (See, e.g., paragraph beginning at page 26, line 4 of the specification).

In Figs. 5A-5B of the present invention, the 3T recording mark A' or the 3T recording mark B' corresponds to "a first peak pulse for forming a short recording mark". The leading pulse 1A' or the trailing pulse 3A' (or the leading pulse 1B' or the trailing pulse 3B') correspond to "a second peak pulse for forming a long recording mark", as recited in claims 13, 22 and 24 (See, e.g., paragraph beginning at page 51, line 18 of the specification).

Likewise, any pulse can be used as a first pulse, as long as it is "a first peak pulse for forming a short recording mark", and any pulse can be used as a second pulse, as long as it is "a second peak pulse for forming a long recording mark" (See, e.g., paragraph beginning at page 52, line 3 of the specification).

Thus, the only limitation missing from the independent claims is the power coefficient, item (3). Accordingly, claim I has been amended to recite:

...determining a power level of the first pulse using a power coefficient defining a power ratio between the power level of the first pulse and a power level of the second pulse, wherein the power coefficient and the power level of the second pulse are dependent on the linear velocity.

Support for this amendment can be found in paragraph bridging pages 22-23 of the specification. Independent claims 10, 12, 13, 22, and 24 are amended similarly.

The significance of the operation of the present invention is to maintain an even mark width in cases where information is recorded at a constant angular velocity at high density and high speed. (See, e.g., page 2, line 22 to page 3, line 10 of the specification).

FIG.2A

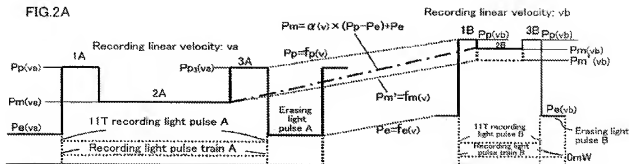


FIG.2B

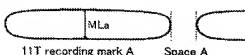
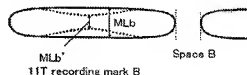
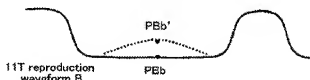
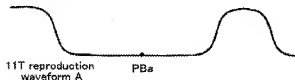
Recording linear velocity: v_a Recording linear velocity: v_b 

FIG.2C



Referring to Figs. 2A-2C of the present application, the erasing power levels $P_e(v_a)$ and $P_e(v_b)$ can be determined by continuous functions depending on the linear velocity, since the erasing power level determines the optimum temperature of the heat energy necessary for crystallization of the recording space, which is based on the linear velocity. (See, e.g., paragraph bridging pages 21-22 of the specification).

However, the optimum middle power level $P_m(v)$ cannot be obtained as a function depending only on the linear velocity, or else its resulting mark width will fall short (M1b'). Thus, the power of the first pulse is adjusted based on the power of the second pulse, for amorphization of the recording mark. (See, e.g., page 22, lines 10-26 of the specification).

Regarding Toda et al., the light beam intensity upon recording and fluctuation of environmental temperature are detected. The amount of light beam intensity is adjusted in accordance with the detected temperature (column 8, lines 29-47 of Toda). There is

no disclosure or suggestion in Toda of "determining a power level of the first pulse using a power coefficient defining a power ratio between the power level of the first pulse and a power level of the second pulse, wherein the power coefficient and the power level of the second pulse are dependent on the linear velocity", as recited in the amended independent claims of the present application.

The method of Toda et al. would be impractical to measure temperature changes repeatedly in cases of recording information at high density and high speed. Such a feature would hinder recording speed/performance.

Advantageously, in the present invention, using a power coefficient dependent on the power level of the second pulse and linear velocity, and optimizing the power coefficient, provides an improved method of maintaining an appropriate recording mark width/shape.

For at least these reasons, applicants respectfully submit that the invention as recited in the amended claims is both novel and non-obvious in view of Toda et al. Withdrawal of the rejection is respectfully requested.

V. CONCLUSION

Accordingly, all claims 1-24 are believed to be allowable and the application is believed to be in condition for allowance. A prompt action to such end is earnestly solicited.

Should the Examiner feel that a telephone interview would be helpful to facilitate favorable prosecution of the above-identified application, the Examiner is invited to contact the undersigned at the telephone number provided below.

Should a petition for an extension of time be necessary for the timely reply to the outstanding Office Action (or if such a petition has been made and an additional extension is necessary), petition is hereby made and the Commissioner is authorized to charge any fees (including additional claim fees) to Deposit Account No. 18-0988.

Respectfully submitted,

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